

Virginia Commonwealth University
2017-2018 Council for Community Engagement Grants

**Community-Engaged Research Partnership
Development Grant: Proposal Guidance**

Application Deadline Friday, February 24, 2017 at 5:00 p.m.

General Information: community.vcu.edu/council/community-engagement-grants/

FAQs: community.vcu.edu/council/community-engagement-grants/frequently-asked-questions/

Submit the proposal package by Friday, February 24, 2017 at 5:00 p.m.
via e-mail to Tessa McKenzie at tcmckenzie@vcu.edu.

Proposal Overview

Abstract

Urban Tree Cover (UTC) is an environmental, social, and human health asset, however, often unequally distributed across urban landscapes. Increasing UTC in the Carver neighborhood is a need identified by community partner Carver Area Civic Improvement League (CACIL).

Community partners Capitol Trees (CT) and Richmond Tree Stewards (RTS) agree to provide expert support. We propose a Community Engaged Research (CEnR) Partnership to investigate spatial distribution of UTC in relation to socioeconomic and environmental factors, and policies to ameliorate inequities in UTC ecosystem services. Academic collaborators are the VCU Center for Environmental Studies (VCU-CES) and the VCU Office of Sustainability (VCU-OOS).

Outline of Proposed Goals and Objectives

Goal 1: Identify prospective partners interested in investigating the ecosystem services conveyed by urban tree cover to the Richmond community. *Objectives:* 1) identify faculty currently engaged in research related to urban ecology, the built environment, urban planning, environmental policy and justice, and public health; 2) hold informal meetings and conversations to learn more about potential partners and gauge interest in CEnR partnership.

Goal 2: Build relationships among potential partners. *Objectives:* 1) host a series of roundtable discussions with each project partner to discuss organizational missions and research interests; 2) co-host an Urban Forestry workshop for VCU and community members at the VCU Rice Rivers Center.

Goal 3: Identify shared research interests and develop summary of research questions jointly developed by academic and community partners. *Objectives:* 1) develop a Service Learning

Capstone course designed to develop spatial data layers, reports, and assessment tools for CEnR and community partners to assist in determining research direction; Objective 2) assess needs of community partners and the research interests of VCU CEnR partners; 3) work with community partners to prioritize research projects.

Alignment with VCU Quest for Distinction

This proposal aligns with all three Quest themes. We propose to establish a service-learning designated capstone course entitled “Urban Ecology” designed to teach students about the ecology of urban forests, including the human dimensions, through hands-on experiential learning. Students will work with community partners to collect data on existing forest cover, estimate economic value of carbon sequestration, and model future scenarios. Students will also assist conceptualizing reforestation activities, providing both independent research and service learning experience. Analyses of the spatial distribution of urban forest and relationship to key socio-economic factors across the Richmond Metropolitan Area will advance knowledge, while recommendations resulting from the analyses have the potential to enhance quality of life locally and regionally. Establishing a CEnR partnership to collaborate on future research investigating links between urban ecology and public health/community well-being has the potential to provide a model for other urban universities and surrounding communities in developing mutually beneficial community forestry and research programs.

Proposal Narrative

Current Relationship: In 2012, VCU worked with RTS in attaining Tree Campus USA certification through the Arbor Day Foundation. CT is a local NGO that fundraises to support greening projects in Richmond and works closely with RTS. With funding awarded by the EPA, VOOS and CES are currently engaged with CACIL to develop a stormwater management plan for the neighborhoods surrounding VCU's campus. The current proposal to develop a broader CEnR partnership emerged from shared goals and recognition that higher quality research and greater community impact could be achieved through a more inclusive campus-wide partnership.

Shared Interests/Current Goals: The focus of our proposal is understanding potential benefits of UTC. CACIL expressed the need to increase tree cover in the Carver community due to the environmental, economic, and health benefits trees provide. RTS and CT and they have agreed to provide expert assistance and support to CECIL. Specific concerns expressed by CECIL included mitigating carbon emissions from cars traveling on Interstate 95 adjacent to the Carver neighborhood. Although trees lining Richmond's streets are rarely perceived as a "forest", research shows that in Washington D.C., the "urban forest" contributes substantially to CO₂ sequestration and reduction of CO₂ emissions (Casey Forest 2015). In addition UTC provides environmental and economic benefits such as: reducing urban heat effects; improving air and water quality; reducing noise pollution; stress reduction; lower rates of childhood asthma, obesity, and attention disorders; reduced crime; increased real estate values; increased foot traffic to local businesses; and stronger community cohesiveness (Kuo and Sullivan 2001, Schwarz et al 2015). However, in discussions among the community partners it became clear increasing UTC is a much bigger issue than just planting a few trees. There are many institutional, economic, environmental, and cultural obstacles to initiating and maintaining neighborhood tree programs.

CACIL's desire to develop a community tree program aligns with VOOS goal to investigate the feasibility of adopting a carbon offset program in order to meet emissions goals specified in the American Colleges and Universities Presidents Climate Commitment (ACUPCC) and the VCU Climate Action Plan (CAP). Estimates of total CO₂ storage by trees in U.S. cities is 643 million tons (\$50.5 billion value) with 25.6 million tons sequestered annually (Nowak et al. 2013). A Carbon Offset program that includes an urban forestry component has the potential to overcome some of the obstacles to urban tree programs identified by community partners, but developing such a program will require research on the potential benefits and obstacles to initiating and maintaining such a program.

Potential Research Topic(s): A specific challenge identified by CACIL is the City requires citizens pay for and maintain trees planted on public property for three years. Proper selection and maintenance of urban trees also requires training and long term commitment to the project from a largely volunteer workforce. Such institutional obstacles, along with historical legacies of urban neighborhoods, can result in uneven distribution of UTC and disparities in delivery of the environmental, health, and economic benefits—collectively known as ecosystem services—provided by trees (Bigsby et al. 2013, Schwarz et al. 2014). Anecdotal evidence provided by community partners suggest such disparities exist in Richmond. Research conducted by a CEnR partnership can quantify ecosystem services provided by UTC and the relationship between spatial distribution of UTC and socio-economic and environmental factors. Results generated by CEnR partnership would enhance the ability of agencies and NGO's to justify increased investment in UTC and target limited resources where return on investment will provide the greatest benefits (TNC 2017).

Mutual benefits: Community tree projects often fail without leaders committed to educate

residents about the benefits of UTC, then mobilize, energize, and monitor volunteers. In spite of the obstacles identified during discussions with current partners, CACIL President Jerome Legions and Board member Charlene Baylor have enthusiastically committed to supporting a community tree program. RTS and CT will provide expertise, support, and technical guidance in developing UTC programs. Results from a pilot program, along with potential future projects generated by CEnR Partnership, can be leveraged by community partners to support the missions of their organizations by: 1) informing decision making; 2) identifying high priority areas for reforestation and; 3) justification for future program funding.

VCU-CES faculty and students will benefit from the opportunity for Community Engaged research and service. Some funds from the planning grant will be used to support development of a new Service Learning capstone course, ENVS 491: Urban Ecology. Graduate and undergraduate students will develop tools to map UTC, estimate economic value and ecosystem services provided by current UTC, conduct spatial analyses to investigate distribution of UTC in relation to socioeconomic data, and model benefits from future investment. Results of the spatial analysis will provide baseline information for identifying potential research questions. The VCU Office of Sustainability will benefit from data generated to inform the feasibility of adopting an Urban Forestry Carbon Offset program such as The Duke University Carbon Offsets Initiative (Adair et al. 2017).

Studies of urban ecology and human dimensions biology, once rare, are becoming more common in the ecological and environmental literature. Public health researchers and family physicians recognize that public health can be linked to the environment and are incorporating environmental parameters in epidemiological research. Human Dimension Biologists are often Sociologists or Psychologists by training and do research that can uncover public attitudes

toward science and the environment. The results can provide valuable insight into the impact of public perception on likely success in meeting public health, conservation, and urban planning goals. Expanding the partnership to a broader community of VCU researchers will result in a more robust body of scientifically rigorous research analyzing environmental, economic, and health factors associated with UTC. Translating the results of such research into actions by community partners benefits the health and wellbeing of residents of Richmond and serve as a model for community engaged research at other universities.

Partnership Development Plan

Plan for relationship building and exploration of shared interests: Partnership relationship-building activities will be co-attended by academic and community project team members. Proposed activities include (1) a series of roundtable discussions for project partners to discuss organizational mission and interests, (2) an Urban Forestry workshop for VCU and Carver community members at the VCU Rice Rivers Center.

Plan for exploring shared research interests: Research interests will be developed through a collaborative, supportive process. Proposed activities include (1) developing an ENVS Service Learning course that will collect and analyze data resulting in spatial data layers, reports, and assessment tools that can be shared with community and potential CEnR partners for strategic planning, (2) identifying areas of common interest between needs of community partners and the research interests of VCU CEnR partners and; 3) work with community partners to prioritize research projects.

Plan for final deliverables: Research questions will be developed through relationship building and research interest exploration and curated into a final list. Research questions will be shared

with CEnR partners for comment and approval before final list is submitted as deliverable. A Memorandum of Understanding (MOU) will codify CEnR partner relations and expectations and come to a mutual understanding of research project scopes and mutual benefit of proposed projects. MOU will include (1) specific goals, objectives, and outcomes for research questions (2) identify roles and expectations of academic and community partners, (3) establish a process for decision making that supports mutual respect, open communication, and recognition of the knowledge and expertise of all process participants. Partnership development will be evaluated by (1) summarizing the research question development process, (2) document goal setting and infrastructure development process including principal accomplishments (3) document project barriers and challenges with a list of recommended solutions and avenues for future work.

Commitment to Community Engaged Research

The project team is will demonstrate a commitment to the principles of community engaged research by facilitating a collaborative process between academic and community units that will create and disseminate knowledge and creative expression with the goal of contributing to the study of UTC, environmental health, and the well-being of the community. The project team recognizes and celebrates the assets of all stakeholders and will actively incorporate them in the design and conduct of different phases of the research process.

Timeline

Month	Proposed Activities
July 2017	<ul style="list-style-type: none"> ● Hold roundtable meetings with community partners ● Assemble aerial data
August 2017	<ul style="list-style-type: none"> ● Hold roundtable meetings with community partners ● Identify faculty engaged in related research ● Establish data standards for on the ground data collection ● ENVS 491 begins
September 2017	<ul style="list-style-type: none"> ● Urban Forestry workshop at Rice Rivers Center ● Initiate on the ground tree inventory in Carver
October 2017	<ul style="list-style-type: none"> ● Complete on the ground tree inventory in Carver
November 2017	<ul style="list-style-type: none"> ● Analyze aerial and ground tree inventory data ● Publish baseline data layers
December 2017	<ul style="list-style-type: none"> ● Use baseline data to assess partner needs ● Begin generating research questions
January 2018	<ul style="list-style-type: none"> ● Initiate work on post award requirements ● Explore research questions and identify project leaders
February 2018	<ul style="list-style-type: none"> ● Finalize research questions ● MOU development
March 2018	<ul style="list-style-type: none"> ● MOU development
April 2018	<ul style="list-style-type: none"> ● MOU development
May 2018	<ul style="list-style-type: none"> ● Conduct partnership development evaluations ● Finalize MOU
June 2018	<ul style="list-style-type: none"> ● Complete and publish post award requirements

Budget Justification

Graduate student summer salary is requested to support the work of Jane Remfort. Jane will be collecting and processing aerial imagery data used to calculate CO₂ sequestration and model future climate scenarios.

Funding for DBH Tapes, Laser Range Finders, and Clipboards are requested for data collection during on the ground tree inventories in Carver. DBH tapes measure tree diameter, Laser Range Finders measure tree canopy height, and Clipboards will be used for record keeping and supply storage in the field.

Funding for GPS units is requested to support high quality spatial data collection with integrated data collection for physical tree information. This data will be backed up into a spatial geodatabase and used by students in estimating the economic and social value of trees in the Carver Community. Spatial data collected via GPS units will ultimately be shared with community partners. It is impossible to collect accurate location information without these units.

Funding for transportation is requested to fund the rental of a VCU bus to transport Carver community members to and from the VCU Rice Rivers Center during the Urban Forestry Workshop.

Biographical Sketches

Wyatt Carpenter is a Project and Programs Coordinator in VOOS since 2015. Wyatt holds an MS in Environmental Studies, a BS in Environmental Studies and a BS in Urban and Regional Studies, all completed at VCU. In his role in the Office of Sustainability Wyatt coordinates data collection for VCU's annual greenhouse gas emission reports and evaluates and implements emission reduction projects. Wyatt is interested in using his strong background in spatial technology, environmental research, and data collection to support creative projects that benefit VCU and the Richmond community.

Jennifer Ciminelli completed her Bachelors of Science degree at the State University of New York College of Environmental Science and Forestry in Syracuse, New York. She went on to complete her Masters of Science from Virginia Commonwealth University Center for Environmental Studies in Richmond, Virginia. Ms. Ciminelli is the VCU Rice Rivers Center Research and Data Coordinator as well as instructional faculty in the Center for Environmental Studies at VCU. Her focus for the Rice Rivers Center is to implement the Rice Rivers Center data management plan while helping to coordinate research that takes place on the site. Ms. Ciminelli teaches an upper level undergraduate course in Environmental Data Visualization which focuses on database and geospatial applications. Ms. Ciminelli was awarded funding on two research grants, an EPA Urban Waters Small Grant titled, "*A Partnership-Focused Community Greening and Green Infrastructure Plan for the VCU and Richmond Community*", and a Virginia Department of Environmental Quality Coastal Zone Management Program Grant titled, "*The Coastal Virginia Ecological Value Assessment: a collaborative integration of conservation datasets and priorities in Virginia*".

Dr. Edward R. Crawford is the Deputy Director of the VCU Rice Rivers Center and is an Assistant Professor within the VCU Center for Environmental Studies. He teaches undergraduate courses in general biology, botany, ecology, neo-tropical ecology (Study Abroad/Costa Rica/Panama), ecological service-learning and graduate courses in wetlands ecology and restoration ecology. His research interests include modeling carbon dynamics in forested wetlands, quantification of abiotic and biotic factors affecting carbon sequestration in wetlands, invasion characteristics and ecological effects of invasive species in tidal and nontidal wetlands, the use of created wetlands for wastewater treatment and habitat enhancement, and wetlands restoration.

Jerome Legions is from Philadelphia, Pennsylvania and came to Richmond to study English Literature at Virginia Union University. Currently Jerome Legions is the proprietor of a lawn care company. Prior to becoming self-employed, Mr. Legions worked for Anthem Blue Cross Blue Shield. While at Anthem, Mr. Legions held the position of Benefits Analyst I, where he was responsible for working with the Mid-Atlantic Sales team to structure insurance products purchased by major corporations. Outside of employment, Jerome Legions is focused on community service through community involvement. He serves as the president of Carver Area Civic Improvement League. He has charged his administration with keeping the Carver community a great place to live and visit. It is the objective, Mr. Legions works with members of CACIL to foster relationships with city officials, other community organizations and institutions to meet the goal of keeping the Carver community a great place to live and visit. Mr. Legions believes establishing partnerships is the best way to achieve this goal. In his spare time Mr. Legions can be found working and supporting other organizations such as African American Repertory Theatre Company of Virginia, working on a political campaign or in the dojo teaching

Aikido.

Jeanette Felton McKittrick, is the Chair of Capital Trees. She is a retired-marketing communications and public relations professional for Fortune 500 companies. She attended Old Dominion University and West Dean College where she studied U.K- English literature and fine art. McKittrick is also on the Board of the Virginia Institute of Marine Science Foundation.

Jane Remfert is a second year PhD student in the VCU Integrated Life Science program. She is a population geneticist interested in how habitat heterogeneity affects the movement of genes across a landscape and the resulting effect on population genetic structure. I am currently looking at how native and urban landscape structures affect pollen movement in flowering dogwood (*Cornus florida*). This involves characterizing the landscape using remotely sensed data as well as data regarding the distribution of genetic variation across the landscape. Additionally, I am interested in functional effects of gene escape from cultivar to native dogwood populations. My research draws from GIS, population and quantitative genetics, and landscape ecology.

Louise Seals, is a retired journalist, became a Tree Steward in 2008. Finding a new “family” in Richmond’s green community was a logical next step for this farm girl whose family tradition included stewardship of the land and volunteering. From 4-H through state and national professional organizations to Tree Stewards, she has been a leader who engages volunteers and promotes excellence. Tree Stewards received a 2014 Gold Leaf Award for Outstanding Landscape Beautification Activities from the International Society of Arboriculture. In 2015, Seals herself received the 2015 Trailblazers Award for Volunteers from Enrichmond Foundation and the President’s Award for service on Trees Virginia (Virginia Urban Forest Council). In her journalism career, she helped plan and lead numerous major changes at the *Richmond Times-*

Dispatch, from the first use of computers to content and design innovations. She was managing editor from 1994 to 2006, a period in which the newspaper won the Virginia Press Association's top award for public service four times. She holds a BS in journalism from West Virginia University and an MS in mass communications from VCU and has been inducted into Phi Kappa Phi honorary society, Kappa Tau Alpha journalism honorary, and the Virginia Communications Hall of Fame.

Catherine Viverette is an Assistant Professor in the Center for Environmental Studies. She holds a PhD in Integrated Life Sciences and a MS in Environmental Studies from VCU. She received her BS in Biology from Virginia Tech. She teaches a Service Learning designated Study Abroad class, "Panama Avian Ecology", developed as part of a VCU Community Engagement Grant received in 2010. She is a member of the VCU Global Education Advisory Committee, the VCU Undergraduate Research Advisory Committee, and a subcommittee for VCU's Real World Experience Steering Committee. Her research interests focus on ecology and conservation of migratory birds. Specific research interests are trophic ecology and landscape genetics of Bald Eagle and Osprey occupying the Chesapeake Bay. She is also Co-PI on a long-term study of Prothonotary Warblers, a Neotropical migrant that nests in forested wetlands fringing the James River. She is an active member of a global Prothonotary Warbler Working Group.

Letters of Commitment from Community Partners:

CACIL

Carver Area Civic Improvement League

February 23, 2017

Dear Application Review Committee,

The Carver Area Civic Improvement League (CACIL) is interested in continuing to develop a research partnership through the Community Forestry Project. We strongly recognize the need to enhance the City of Richmond's urban forest and the important role urban forests play in providing environmental, social, and human health benefits to citizens. We also understand that for community forestry projects to thrive, we need more scientific research to investigate how urban forests relate to socio-economic factors and provide evidence our organization can leverage to advocate for the urban forest in Richmond.

We are confident this will be a mutually beneficial exchange among our organization, the academic researchers in the VCU Center for Environmental Studies and the VCU Office of Sustainability, and other community partners. With our efforts combined, we believe we will be able to create a valuable final product that will further our own mission, enrich VCU and Richmond at large, and establish a roadmap for future work.

Increasing the number of trees in our neighborhood has been a priority for us, as demonstrated by our allocation of organizational funds for greening and sustainability projects. This grant complements our community's environmental efforts like our community garden, our support and anticipated participation in the EPA Urban Waters grant, and our financial support for the aquaponics project at Carver Elementary School.

It is our pleasure to support the Community Forestry Project and be active participants in its development.

Sincerely,



Jerome Legions

President



February 24, 2017

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In Reference to:
VCU Community-Engaged Research Partnership Development Grant

To the Application Review Committee:

Capital Trees, a non-profit organization focused on improving green infrastructure in the City of Richmond, Virginia, has discussed the development of a research partnership through the Community Forestry Project and is interested in pursuing this project with VCU. An important tenet of Capital Trees' mission is to collaborate with like-minded organizations, schools, corporate and government entities, to restore and advance the natural environment in Richmond.

As such, we strongly recognize the need to enhance the City of Richmond's urban forest and advocate for the important role urban forests play in providing environmental, social, and human health benefits to citizens. We're very pleased to participate in this work, and are confident that this will be a mutually beneficial exchange among our organization, the academic researchers in the VCU Center for Environmental Studies, and the VCU Office of Sustainability, along with other community partners. With our combined efforts, we believe we will be able to create a valuable final product that will further Capital Trees' mission, enrich VCU and Richmond at large, and establish a protocol for future endeavors.

On behalf of the Board of Trustees of Capital Trees, I'm please to offer our support for the Community Forestry Project. We intend to be active participants in its development.

Sincerely yours,

Jeanette McKittrick
Chairman
Board of Trustees

Richmond Tree Stewards
P.O. Box 27222
Richmond, VA 23261-7222



April 24, 2017

Review Committee Members
VCU Community-Engaged Research Partnership Development Grants

To Whom It May Concern:

Richmond Tree Stewards are excited about the Community Forestry Project as a vehicle to enhance citizen understanding of the value of urban trees, to develop and implement a model for successful canopy enhancement in underserved neighborhoods, and to further engage the academic and other human resources of VCU in the cause of sustainable urban environments.

We expect to share our expertise in several areas: (1) working with community groups and individuals, (2) training about tree care, (3) hands-on experience planting and pruning street and park trees, and (4) building partnerships.

We are a partner organization of the Enrichmond Foundation, a 501(c)(3) corporation that provides resources such as financial management and acts as the fiscal agent for more than 100 Richmond groups whose hundreds of volunteers perform essential services in city parks and on other public property. Richmond Tree Stewards has been self-governing since January 1, 2012.

<u>OPERATING YEAR</u>	<u>STEWARDS INVOLVED</u>	<u>TREES CARED FOR</u>	<u>TREES PLANTED</u>	<u>EDUCATION CONTACTS</u>	<u>VOLUNTEER HOURS</u>
1/1/12-12/31/12					2,822
1/1/13-9/31/13					2,186
10/1/13-9/31/14	76	3,492	40	1,059	2,775
10/1/14-9/31/15	80	3,636	162	1,612	3,826
10/1/15-9/31/16	88	2,361	143	1,321	3,594
10/1/16-1/31/17	69	769	197	435	1,374
Totals		10,258	542	4,427	16,577

Yours truly,

Louise Seals
President,
Richmond Tree Stewards

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